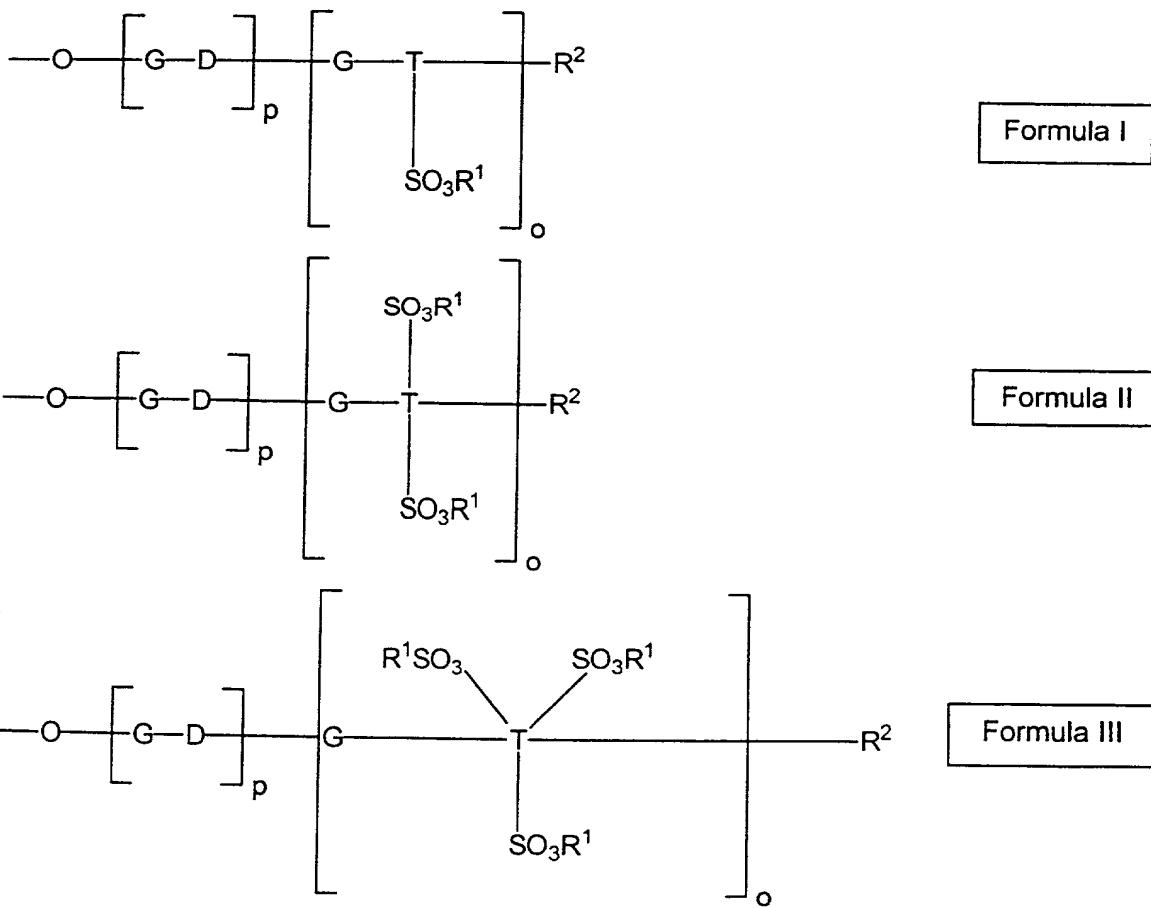


### Patent Claims

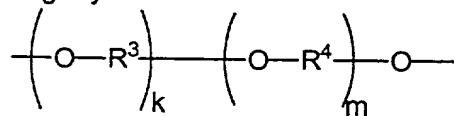
1. Water-soluble and/or water-dispersible comb polymers consisting of a polymer main chain and polyester side-arms which contain sulphone groups and are linked to said polymer main chain via ester groups.
2. Comb polymers according to Claim 1, characterized in that their polymeric main chain is chosen from the group of polymeric aliphatic, cycloaliphatic or aromatic polycarboxylic acids and derivatives thereof such as, for example, polyacrylic acid, polymethacrylic acid and esters thereof (esters of the two acids with aliphatic, cycloaliphatic or aromatic alcohols with C<sub>1</sub> to C<sub>22</sub>), maleic acid, maleic anhydride, fumaric acid and polynorbornenic acid.
3. Comb polymers according to Claim 1, characterized in that they are chosen from the group of polyesters of the following generic structural formulae



where  $p$  and  $o$  are chosen such that average molecular weights of the main chain constituents used are between 200 and 2,000,000 g/mol, where the range 2000 – 100,000 g/mol is preferably used,

the polyester side chains according to formula I - III advantageously consist of:

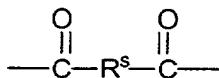
G : chosen from the group of aromatic, aliphatic or cycloaliphatic organyl units having a carbon number of from  $C_2$  to  $C_{22}$  and containing at least two terminal oxygen atoms, or derivatives of a polyglycol of the form  $HO-[R^3-O]_k-[R^4-O]_m-H$ , corresponding to an organyl unit



where the radicals  $R^3$  and  $R^4$  are alkylene radicals having a carbon number of from  $C_2-C_{22}$ , where the two radicals do not necessarily have to be different,

where the following applies for the coefficients  $k$  and  $m$ :  $k+m \geq 1$ , where  $k$  and  $m$  can also be chosen such that the average molecular weights, referred to previously, of the main chain constituents used are achieved.

D : an aromatic, aliphatic or cycloaliphatic organyl unit having a carbon number of from  $C_2$  to  $C_{22}$  and containing at least two terminal acyl groups, where combinations of two or more different acid components may also be present in the claimed target molecule, for example an organyl unit of the scheme



where  $R^s$  can be aromatic and linear or cyclic, saturated or unsaturated aliphatic bifunctional radicals having carbon numbers of from  $C_2$  to  $C_{22}$ .

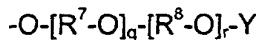
T : a compound from the group of the sulphonated aromatic, aliphatic or cycloaliphatic organyl compounds containing at least two terminal acyl groups

$R^1$  : can be lithium, sodium, potassium, magnesium, calcium, ammonium, monoalkylammonium, dialkylammonium, trialkylammonium or tetraalkylammonium, in

which the alkyl positions of the amines are, independently of one another, occupied by C<sub>1</sub> to C<sub>22</sub>-alkyl radicals and 0 to 3 hydroxyl groups.

R<sup>2</sup>: a molecular moiety chosen from the groups of

- aromatic, aliphatic or cycloaliphatic amino functions: (-NH-R<sup>5</sup>, -NR<sup>5</sup><sub>2</sub>, where R<sup>5</sup> can be an alkyl or aryl radical with C<sub>1</sub> to C<sub>22</sub>)
- aromatic, aliphatic or cycloaliphatic monocarboxylic acid groups: (-COOR<sup>6</sup>, where R<sup>6</sup> is an alkyl or aryl radical with C<sub>1</sub> to C<sub>200</sub>)
- aromatic, aliphatic or cycloaliphatic organyl radicals bridged via ether functions: (-O-R<sup>5</sup>)
- polyalkoxy compounds bridging via ether functions and of the form



The radicals R<sup>7</sup> and R<sup>8</sup> are advantageously alkyl radicals having a carbon number of from C<sub>2</sub> to C<sub>22</sub>, where the two radicals do not necessarily have to be different. The radical Y can either be hydrogen or of an aliphatic nature with C<sub>1</sub>-C<sub>22</sub>. For the coefficients q and r the following applies: q+r ≥ 1.

- mono- or polyethoxylated sulphonated organyl radicals bridging via ether functions, or preferably alkali metal or alkaline earth metal salts thereof, such as, for example, advantageously characterized by the generic structural formula -(O-CH<sub>2</sub>-CH<sub>2</sub>)<sub>s</sub>-SO<sub>3</sub>R<sup>1</sup>

where s ≥ 1, and where s can also be chosen such that the average molecular weights, referred to previously, of the main chain constituents used are achieved.

4. Comb polymers according to Claim 1, characterized in that their average molecular weights are advantageously between 200 and 2,000,000 g/mol, particularly advantageously between 200 and 100,000 g/mol, the range 1000 – 30,000 g/mol being preferably used, very particularly advantageously 5000 – 15,000 g/mol.

5. Hair-treatment compositions with an effective content of one or more comb polymers according to one of Claims 1 - 4.